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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/616,335

07/09/2003

Vlasta Brusic Kaufman

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09/11/2007

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EXAMINER

GOUDREAU, GEORGE A

ART UNIT

PAPER NUMBER

1763

MAIL DATE

DELIVERY MODE

09/11/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/616,335

Applicant(s)

KAUFMAN ET AL.

Examiner

George A. Goudreau

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 April 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☒ Claim(s) 16-19 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

George A. Goudreau
GEORGE GOUDREAU
PRIMARY EXAMINER

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

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1. This action will not be made final due to the new grounds of rejection.
2. Applicant's arguments with respect to claims of record have been considered but are moot in view of the new ground(s) of rejection.
3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-2, 4-6, and 8-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Hirabayashi et. al. (5,575,885).

Hirabayashi et. al. disclose a process for cmp polishing a Cu layer on a wafer using a cmp slurry which is comprised of the following components:

-H₂O;

-9 wt. % silica or alumina abrasive particles;

-13 wt. % H₂O₂ (i.e.-an oxidizer); and

-0.1 wt. % aminoacetic acid (i.e.-a complexing agent)

They further disclose that amidosulfuric acid may alternatively be used in place of the aminoacetic acid as the source of the complexing agent in the cmp slurry. There is no separate film forming source in addition to the complexing agent. The pH of the cmp slurry is adjusted between (9-14). This is discussed specifically in column 8; and discussed in general in columns 1-24. This is shown in figures 1-15.

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5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 3, 7, and 11-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over the reference as applied in paragraph 4 above.

The reference as applied in paragraph 4 above fail, however, to specifically disclose the following aspects of applicant's claimed invention:

- the specific cmp polishing parameters, which are claimed by the applicant;
- the specific usage of the type of abrasive particles (i.e.-fumed, colloidal, etc.) which are claimed by the applicant in the cmp slurry; and
- the specific usage of a surfactant in the cmp slurry

It would have been obvious to one skilled in the art to employ a surfactant in the cmp slurry, which is taught above based upon the following. The usage of a surfactant

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in a cmp slurry is conventional or at least well known in the polishing arts. (The examiner takes official notice in this regard.) Further, the usage of a surfactant in the cmp slurry which is taught above would have desirably improved the quality of the cmp polishing of the Cu layer by the cmp slurry by improving the wetting of the surface of the Cu layer with the cmp slurry.

It would have been obvious to one skilled in the art to employ the specific types (i.e.-fumed, colloidal, etc.) of abrasive particles, which are claimed by the applicant based upon the following. The usage of fumed or colloidal type metal oxide abrasive particles in a cmp slurry is conventional or at least well known in the cmp polishing arts. (The examiner takes official notice in this regard.) Further, this simply represents the usage of an alternative, and at least equivalent means for supplying abrasive particles in the cmp slurry to those methods, which are specifically disclosed in this reference.

It would have been prima facie obvious to employ any of a variety of different process parameters in the cmp polishing process which is taught above including those which are specifically claimed by the applicant. These are all well-known variables in the cmp polishing art, which are known to affect both the rate and the quality of the cmp polishing process. Further, the selection of particular values for these variables would not necessitate any undo experimentation, which would have been indicative of unexpected results.

Alternatively, it would have obvious to one skilled in the art to employ the specific cmp polishing parameters which are claimed by the applicant in the cmp polishing process which is taught above based upon In re Aller as cited below.

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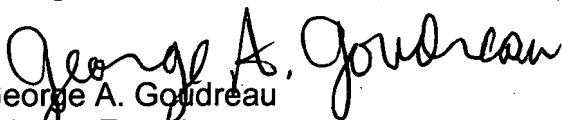
Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. In re Aller, 220 F. 2d 454, 105 USPQ 233, 235 (CCPA).

Further, all of the specific process parameters which are claimed by the applicant are results affective variables whose values are known to affect both the rate, and the quality of the cmp polishing process.

8. Claims 16-19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. Any inquiry concerning this communication should be directed to examiner

George A. Goudreau at telephone number (571)-272-1434.


George A. Goudreau
Primary Examiner
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